

**Criterion**: I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - B.Sc. CHEMISTRY

**Year** : 2015 - 2020



#### FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018

NAME OF THE PROGRAMME: B.SC. CHEMISTRY

PROGRAMME CODE: UACH

#### **PROGRAMME OUTCOMES:**

The learners will be able to

**PO1:** Apply acquired scientific knowledge to solve complex issues.

**PO2:** Attain Analytical skills to solve complex cultural, societal and environmental issues.

**PO3:** Employ latest and updated tools and technologies to analyse complex issues.

**PO4:** Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

#### PROGRAMME SPECIFIC OUTCOMES:-

PSO 1: Thorough understanding of all basic concepts and theories pertaining to Chemistry

PSO 2: A comprehensive view of bonding, structure, reactivity and stability of chemical species.

**PSO 3:** An overall perspective view of physical principles that govern all physical and chemical transformations.

PSO 4: Basic knowledge about instrumentation involving UV, IR, ESR and NMR

**PSO 5:** Hands on experience of laboratory experiments both qualitative and quantitative



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**Year** : 2015 - 2020



**PSO 6:** Project undertaking enables presentation of results and strengthens the learners in lab to land procedures that nurture societal need and environmental protection.

PSO 7: Diversified informative sources that equip learners to enter varied fields

PSO 8: Additional in-puts of using appropriate software related to Chemistry and chemical calculate.

#### 2019 - 2020

Course Code	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	Course description	Course outcomes
19C1CC1	Inorganic Chemistry -I	Regional	This course deals with the basics of chemistry required for UG programme	CO1: To comprehend the fundamental properties of atoms, molecules, and the various states of matte  CO2: To classify the electronic structure of atoms and its influence on chemical properties  CO3: To describe the periodic table as a list of elements arranged so as to



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demonstrate trends in their physical and chemical properties. CO4: To describe the difference(s) between strong acids/bases and weak acids/bases. CO5: To illustrate the factors affecting the strength of acid and bases CO5: To acquire the knowledge of properties, characteristics and application of non-aqueous solvents CO6: To explain the atomic, physical and chemical properties of alkali metals CO7: To recognize the anomalous properties of Li and compares the properties Li with those other alkali metals



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19C1CC2	Organic	Global	This paper deals with	CO1: Gain a thorough knowledge about
1901002		Global		
	Chemistry -I		electron displacement	the chemistry of aliphatic
			effects, Fundamentals	saturated compounds
			of reaction mechanism	CO2: Analyze the behaviour of an
			and prepration,	organic compound through
	A		properties uses of	electron displacement effects.
		7 (	alkanes, cycloalkanes	CO3: Describe the structure and
				stability of different types of
				intermediates involved in reaction
	4	1		mechanism.
				CO4: Know the nomenclature
				classification of alkanes, alkyl,
	16			halides.
		TAME	Li CIGHI	CO5: To derive and familiarise the
				mechanisms of nucleophilic
		V/A	De ro	substitution reactions of organic
		46	DUIS	compounds.



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19C1CC3	Volumetric	Global	This course trains the	CO1: To prepare solutions of desired
	Analysis-I		students to prepare the	concentrations .
			solutions of different	CO2: To apply the principles of
		A	concentrations and to	volumetric analysis in acid base,
			estimate quantitatively	permanganometry, and
			by different techniques	iodometric titrations.
		7		CO3: To compare the principles behind
				all types of titrations
			71/52	CO4: To identify suitable indicators for
	2			a particular reaction.
19C1NME	Profitable Home	Global	This course is designed	CO1: Gain knowledge about the
	Industries		for the students to	fundamental chemistry involved
		KIND	become self- employed	in dairy products, factors
			by training them in the	affecting quality, quantity of milk
			preparation of	and metals and non-metals used
			household articles	in dairy industries
				CO2: Recognize the important nutrients



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			COL	present in food  CO3: Learn the ingredients required for the preparation of various types of shampoos, skin powder, nail polish etc  CO4: Demonstrate the preparation of some home products like candle.  Detergent powder, soap oil, ink ,phenoyl and computer sambirani
19Z1ACC1	Allied Chemistry-I	National	This paper deals with the concept of chemical bonding – detailed study of VB Theory & MO Theory and types of Organic Reactions	CO1: To predict the geometry of any molecule with the help of VB and VSEPR theory CO2: To construct M.O diagram for homo nuclear diatomic molecule CO3: To categorize the types of organic reactions. CO4: To describe the chemistry of



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		NA A	COZ	carbohydrates.  CO5: To classify reactions involved in volumetric analysis
19N1ACC1	Allied Chemistry-I	National	This paper deals with the concept of chemical bonding - detailed study of VB Theory & MO Theory. Types of Organic Reactions	CO1: To predict the geometry of any molecule with the help of VB and VSEPR theory  CO2: To construct M.O diagram for homo nuclear diatomic molecule  CO3: To categorize the types of organic reactions.  CO4: To describe the chemistry of carbohydrates.  CO5: To classify reactions involved in volumetric analysis
19C2CC4	Inorganic Chemistry -II	Regional	This paper deals with the theories of bonding	CO1: To categorize the soft, hard and border line acids and bases.



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		A A	and the chemistry of III, IV, V & amp; VI group	CO2: To predict the structure of an ionic crystal through radius – ratio rule.
			elements.	CO3: To understand the synthetic importance of organo metallic compounds of Al, B and Si CO4: To criticize the chemistry of
	15 Jan 19 19 19 19 19 19 19 19 19 19 19 19 19			hydrazine and hydroxyl amine  CO5: To list out the allotropic modifications of oxygen and sulphur  CO6: To draw the structure of oxoacids and oxy halides of sulphur
19C2CC5	Organic Chemistry – II	Regional	This course covers the topics alkenes, alkynes and organo metallics	CO1: Gain a basic knowledge about the chemistry of aliphatic unsaturated compounds like alkenes, alkynes and alkadienes



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	with special emphasis	organometallics, alcohols and
	_	
	on their synthetic	ethers
	applications	CO2: Recognise different types of
	I EAD	chemical reactions such as
	LEND	addition, elimination,
		substitution, oxidation and
		reduction
		CO3: Enlighten the relationship
		between the structure and acidity
		and basicity of the organic
(2)		compounds
		CO4: Use IUPAC nomenclature to name
		and draw a range of organic
TIME!	LY LIGHT	compounds with number more
		than 8 carbon atoms
A A		CO5: Describe and give reasons for the
		following physical properties of
		organic compounds: melting and



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				boiling point and solubility
19C2CC6	Volumetric Analysis-II	Global	This course trains the students to prepare the solutions of different concentrations and to estimate quantitatively by different techniques	CO1: To apply the principles of volumetric analysis in various estimations.  CO2: To estimate the amount of calcium using permangano metric method  CO3: To estimate the amount of calcium and magnesium using EDTA method.  CO4: To apply the principle of Argentimetry in the estimation of chlorideions.  CO5: To understand the principles behind the estimations of phenol & Aniline iodometrically.
19Z1ACC2	Allied Chemistry	National		CO1; Describe the principles and



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Practicals -II		This course trains the	procedures of various titrimetric
		students to prepare the	methods
		solutions of different	CO2: identify suitable indicators for a
		concentrations and to	particular reaction
		estimate quantitatively by different techniques	CO3: know the various terms such as standard solution, normality,
	7		molality, molarity, equivalent weight and molecular weight.
2			CO4: select the specific titric method to estimate the amount of analyte
			present in the given solution. CO5: Apply the expressions and
8	MIND	LY LIGHT	equations to calculate the strength of solutions
Allied Chemistry Practicals - II	National	This course trains the students to prepare the solutions of	CO1: Describe the principles and procedures of various titri metric methods
	Allied Chemistry	Allied Chemistry National	Allied Chemistry Practicals - II  students to prepare the solutions of different concentrations and to estimate quantitatively by different techniques  This course trains the students to prepare



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			different	CO2: identify suitable indicators for a
			concentrations and to	particular reaction
		AR P	estimate quantitatively	CO3: know the various terms such as
			by different techniques	standard solution, normality,
			1230	molality, molarity, equivalent
				weight and molecular weight.
		<b>Y</b> ( (		CO4: select the specific titric method to
				estimate the amount of analyte
	)			present in the given solution.
		15		CO5: Apply the expressions and
	4			equations to calculate the
			VI	strength of solutions
19C2NME	Profitable Home	Global	This course is designed	CO1: Gain knowledge about the
	Industries	TAND	for the students to	fundamental chemistry involved
			become self-employed	in dairy products, factors
		YVIA	by training them in the	affecting quality, quantity of milk
		16	preparation of	and metals and non-metals used



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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			household articles  EAD  AD  AD  AD  AD  AD  AD  AD  AD  A	in dairy industries  CO2: Recognize the important nutrients present in food  CO3: Learn the ingredients required for the preparation of various types of shampoos, skin powder, nail polish etc  CO4: Demonstrate the preparation of some home products like candle.  CO5:detergentpowder,soapoil,ink ,phenoyl and computer sambirani
19Z2ACC3	Allied Chemistry- II	National	This paper gives a basic understanding of chemistry to other major students as allied paper.	CO1: To apply the rules for naming the metal complexes / coordination compounds.  CO2: To recognize the applications of metal complexes in biological systems.



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			COL	CO3: To analyze the various organic compounds qualitatively  CO4: To understand the procedure involved in detection of elements.  CO5: To understand the kinetics of a chemical reaction and to predict the order of a particular reaction
			3/53	CO6: To evaluate the types of catalysis and theories of catalysis
19N2ACC3	Allied Chemistry- II	National	This paper gives a basic understanding of chemistry to other major students as allied paper.	CO1: To apply the rules for naming the metal complexes / coordination compounds.  CO2: To recognize the applications of metal complexes in biological systems.  CO3: To analyze the various organic compound qualitatively



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			COL	CO4: To understand the procedure involved in detection of elements.  CO5: To understand the kinetics of a chemical reaction and to predict the order of a particular reaction  CO6: To evaluate the types of catalysis and theories of catalysis
19Z2ACC4	Allied Chemistry Practicals- II	National	This course trains the students to analyse the given organic compound	CO1: Gain the knowledge of appearance, colour, physical state, and odour of organic substances.  CO2: Distinguish whether the given compound is Aliphatic or Aromatic, and Saturated or Unsaturated.  CO3: Perform the confirmatory test for various functional groups present



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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	1		T	
			COL	in the given organic compound.  CO4: Recognize the usage of apparatus and laboratory reagents.  CO5: Relate the experimental observations with theory behind practicals.
19N2ACC4	Allied Chemistry	National	This course trains the	CO1: Gain the knowledge of
	Practicals-II		students to analyse the given organic compound	appearance, colour, physical state, and odour of organic substances.  CO2: Distinguish whether the given
		AME	DURA	compound is Aliphatic or Aromatic, and Saturated or Unsaturated.  CO3: Perform the confirmatory test for various functional groups present in the given organic compound.



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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		CINIA P	COZ	CO4: Recognize the usage of apparatus and laboratory reagents.  CO5: Relate the experimental observations with theory behind practicals.
COURSE CODE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	COURSE DESCRIPTION	Course Objectives
C3CC6	Organic And Inorganic Chemistry	Regional	This paper deals with the concept of aromaticity and the inorganic chemistry part of the paper deals with the general characteristics of elements	<ul> <li>To interpret the concept of aromaticity and the main properties of aromatic compounds.</li> <li>To correlate different bond types of carbon and its hybrid orbitals.</li> </ul>
C3CC7	Physical	Regional	This course provides a	Calculate mass defect, packing



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	Chemistry-I	A INT	detailed study of Gaseous state, Solutions, Theory of dilute, solutions and Radio activity	fraction and binding energy for any nuclei  Predict the growing rate, mechanism and age of plants using radioactive elements
C3SB1	Agricultural Chemistry	Global	The Course gives an introduction to soil and fertilizers and also gives the effect of pesticides.	<ul> <li>To recognise the importance of soil</li> <li>To recall the names of fertilizers</li> </ul>
P3ACC1	Allied Chemistry-	National	This paper deals with topics namely bonding and shapes of molecules. Certain physical chemistry portions such as chemical kinetics, thermodynamics are	<ul> <li>To comprehend the fundamental theories of Valence Bond, types of overlapping and VSEPR.</li> <li>To classify the shapes of covalent molecules</li> </ul>



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			included	
C4CC8	Inorganic Chemistry-III	Global	The Course enables the students to gain knowledge on the chemistry of coordination compounds, carbonyl compounds and "F' block elements.	<ul> <li>Get an overview about the reaction mechanism of metal complexes</li> <li>Know the structure and bonding of important coordination compounds</li> </ul>
C4CC9	Physical Chemistry-I	Regional	This course provides an elaborate study of chemical kinetics, solid state and distribution law.	
C4SB2	Natural And Synthetic Dyes	Global	This paper highlights the uses of dyes in our day today life.	<ul> <li>To know and comprehend the principle and theories of dyes</li> <li>To identify the chromophoric groups</li> </ul>



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			es in dyes		and auxochrom
P4ACC2	Allied Chemistry-	National	This course gives a detailed study of periodic properties, electrochemistry & photochemistry.		To predict the periodicity in the periodic table.  To construct an electrochemical cell diagram and identifying the anode, cathode.
C4CC10	Qualitative Analysis	Global	This paper involves the analysis of inorganic mixtures an acid and basic radicals qualitatively.	•	To identify the group cations  To analyse the presence acid and basic radicals in the given mixture of acid
P4ACC3	Allied Chemistry Practicals	National	This course trains the students to estimate the solutions quantitatively by different techniques.	•	To select the specific titric method to estimate the amount of analyte present in the given solution.  To apply the expressions and equations to calculate the strength of solutions



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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



Organic	Regional	This course provides		To analyze the synthetic importance
	rtegionar			of reactive methylene compounds
				To generalize the characteristic
				features of optical isomers and
		LIAU		-
				geometrical isomers
/2.		Compounds		
Spectroscopy	Global	This paper will be of	•	To identify various functional groups
		much use of the		present in organic molecules using
		stud <mark>ent</mark> s to take up		IR frequency.
	75	higher studies.	•	To predict the number and nature of
6				protons/ carbons in organic
				molecules in 1H-NMR/ 13C-NMR
6				spectroscopy
Bio Chemistry	Regional	This course gives an	•	To identify the various metabolic
		overview of		reactions
	VIA	classification of	•	To understand the importance of
		enzyme and		nucleic acids
		mechanism of enzyme		
		Chemistry – III  Spectroscopy  Global	Chemistry – III  an elaborate study of the preparation, reactions and synthetic application of organic compounds  Spectroscopy  Global  This paper will be of much use of the students to take up higher studies.  Bio Chemistry  Regional  This course gives an overview of classification of enzyme and	Chemistry – III  an elaborate study of the preparation, reactions and synthetic application of organic compounds  Spectroscopy  Global  This paper will be of much use of the students to take up higher studies.  Bio Chemistry  Regional  This course gives an overview of classification of enzyme and



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			action	
C5SB3	Medicinal Chemistry	Global	This paper highlights the causes of common diseases the role of vitamin for the healthy life and the importance of hormones	<ul> <li>To study the mechanism of drug action</li> <li>To determine the designing and binding of drugs with receptors</li> </ul>
C5SB4	Nano Chemistry	Global	This paper deals with study of synthesis, properties, structure and applications of nano particles.	science.
C6CC13	Organic Chemistry-IV	Regional	This paper includes the topics, Polynuclear Hydrocarbons, Heterocyclic	<ul> <li>To explicate the structures of Citral, Dipentene and Camphor.</li> <li>To distinguish the properties of quinolin and isoquinolin</li> </ul>



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		ALA	Compounds, Amino Acids and Proteins, Alkaloids and terpenes.		
C6CC14	Physical Chemistry- IV	Regional	This course gives a detailed study of electrochemistry & photochemistry		Calculate the cell potential for a nonstandard cell.  Know the chemical reactions used in a lead-acid battery
С6МЕЗ	Advanced Organic Chemistry	Global	The course is offered to expose the advanced topics in the field of organic chemistry.	•	To sketch Frontier molecular orbitals in photochemistry.  To differentiate the molecular rearrangements and to solve the simple problems
C6ME5	Advanced Physical Chemistry	Global	The course is offered to expose the advanced topics in the field of physical chemistry.		To understand the theories behind the spectral techniques like MW.IR,NMR and ESR To study the applications of the above techniques to elucidate the



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				structures of molecules
C6SB5	Computers in Chemistry	Global	This course deals with the use of computers in molecular modeling and drug design and also covers the use of internet and its application in data search.	<ul> <li>1 To write programs to determine lattice energy, half-life, normality, molarity, molarity</li> <li>To present structure based drug designing in both 2D and 3D</li> </ul>
C6SB6	Green Chemistry	Global	This course highlights the need for green chemistry approach which is the need of hour to protect the environment from hazardous chemical pollution.	<ul> <li>To differentiate between yield and atom economy</li> <li>To interpret the concept of Stereo selectivity, Chemo selectivity and Regio selectivity</li> </ul>



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C6CC15	Inorganic Chemistry Practicals	Global	This paper deals with the preparation of some inorganic complexes and		Acquire the knowledge of concept of gravimetric estimations.  Recognise the role of reagents in chemistry.
			gravimetric estimation of metal ions		
C6CC16	Organic Chemistry Practicals	Global	This paper deals with the preparation of some organic Compounds and analysis of organic compounds.		Recognize the usage of apparatus and laboratory reagents.  Relate the experimental observations with theory behind practicals.
C6CC17	Physical Chemistry Practicals	Global	This paper involves the experimental studies on Rast method, determination of transition temperature, phase diagrams,	•	Experience in some scientific methods employed in basic and applied physical chemistry  Developed skills in procedures and instrumental methods applied in analytical and practical tasks of



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Year : 2015 - 2020



			&electro chemistry	physical chemistry
C6CC17	Green Chemistry Practicals	Global	This paper includes the greener methods of preparation of Organic compounds and nano particles	<ul> <li>To understand green synthetic methods</li> <li>To familiarise the synthesis of silver nano particle by green approach</li> </ul>

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C1CC1	Inorganic	Regional	This course deals with	To comprehend the fundamental
	Chemistry -I		the basics of chemistry	properties of atoms, molecules,
		MAT	required for UG	and the various states of matter
		A LI	programme	To classify the electronic
				structure of atoms and its



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				influence on chemical properties
C1CC2	Organic Chemistry -I	Global	This paper deals with electron displacement effects, Fundamentals of reaction mechanism	<ul> <li>Recognize the basic practical skills for synthetic methods of alkenes, and alkyl halide</li> <li>Know the rules for naming different organic compounds</li> </ul>
C1NME1	Profitable Home Industries	Global	This course is designed for the students to become self-employed by training them in the preparation of household articles	<ul> <li>To interpret the hazardous chemicals used in cosmetics.</li> <li>To prepare the various house hold items in laboratory</li> </ul>
Z1ACC1	Allied Chemistry-I	National	This paper deals with the concept of chemical bonding – detailed study of VB Theory & MO Theory	<ul> <li>To predict the geometry of any molecule with the help of VB and VSEPR theory</li> <li>To construct M.O diagram for homonuclear diatomic molecule</li> </ul>



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			and types of Organic Reactions	
N1ACC1	Allied Chemistry-I	National	This paper deals with the concept of chemical bonding – detailed study of VB Theory & MO Theory. Types of Organic Reactions	<ul> <li>To predict the geometry of any molecule with the help of VB and VSEPR theory</li> <li>To construct M.O diagram for homo nuclear diatomic molecule</li> </ul>
C2CC3	Inorganic Chemistry -Ii	Regional	This paper deals with the theories of bonding and the chemistry of III, IV, V & Damp; VI group elements.	<ul> <li>To categorize the soft, hard and border line acids</li> <li>To understand the synthetic importance of organometallics</li> </ul>
C2CC4	Organic Chemistry – II	Regional	This course covers the topics alkenes, alkadienes, alkynes	Enlighten the relationship     between the structure and acidity     of the compounds



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		MA	and organometallics with special emphasis on their synthetic applications	•	Interpret the concept of resonance and stability of compounds
C2CC5	Profitable Home Industries	Global	This course is designed for the students to become self-employed by training them in the preparation of household articles		To interpret the hazardous chemicals used in cosmetics.  To prepare the various house hold items in laboratory
Z2ACC2	Allied Chemistry- II	National	This paper gives a basic understanding of chemistry to other major students as allied paper	•	To illustrate and tabulate the reactions of different functional groups.  To understand the kinetics of a chemical reaction and to predict the order of a particular reaction
N2ACC2	Allied	National	This paper gives a	•	To illustrate and tabulate the



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	Chemistry- II		basic understanding of	reactions of different functional
			chemistry to other	groups.
		AA	major students as	To understand the kinetics of a
			allied paper.	chemical reaction and to predict
			EAD	the order of a particular reaction
C2CC5	Volumetric	Global	This course trains the	To apply the principles of
	Analysis	7	students to prepare the	volumetric analysis in various
	3		so <mark>lu</mark> tions of different	estimations.
			concentrations and to	To estimate the amount of
	4	1	estimate quantitatively	calcium using permangano metric
			by different techniques	method
Z2ACC3	Allied	National	This course trains the	Select the specific titric method
&	Practicals	AVADIS	students to estimate	to estimate the amount of analyte
N2ACC3		TAMBE	the solutions	present in the given solution.
			quantitatively by	Apply the expressions and
			different techniques.	equations to calculate the
		The state of the s		strength of solutions
		KAI	different techniques.	_



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C3CC6	Organic	Regional	This paper deals with	To interpret the concept of
	And Inorganic Chemistry	Regional	the concept of aromaticity and the inorganic chemistry part of the paper deals with the general characteristics of elements	<ul> <li>aromaticity and the main properties of aromatic compounds.</li> <li>To correlate different bond types of carbon and its hybrid orbitals.</li> </ul>
C3CC7	Physical Chemistry-I	Regional	This course provides a detailed study of Gaseous state, Solutions, Theory of dilute, solutions and Radio activity	<ul> <li>Calculate mass defect, packing fraction and binding energy for any nuclei</li> <li>Predict the growing rate, mechanism and age of plants using radioactive elements</li> </ul>
C3SB1	Agricultural Chemistry	Global	The Course gives an introduction to soil and fertilizers and also gives the effect of	<ul> <li>To recognise the importance of soil</li> <li>To recall the names of fertilizers</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			maatiaidaa	T
			pesticides.	
P3ACC1	Allied	National	This paper deals with	To comprehend the fundamental
	Chemistry-I		topics namely bonding	theories of Valence Bond, types of
			and shapes of	overlapping and VSEPR.
			molecules. Certain	To classify the shapes of covalent
	A		physical chemistry	molecules
		7	portions such as	
			chemical kinetics,	
			th <mark>er</mark> modynamics are	
		RET	included	
C4CC8	Inorganic	Global	The Course enables the	Get an overview about the
	Chemistry-III		students to gain	reaction mechanism of metal
	, Y		knowledge on the	complexes
		MANDE	chemistry of	Know the structure and bonding
			coordination	of important coordination
			compounds, carbonyl	compounds
		N/A I	compounds and "F'	
			block elements.	



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C4CC9	Physical Chemistry-I	Regional	This course provides an elaborate study of chemical kinetics, solid state and distribution law.	crystalline solids
C4SB2	Natural And Synthetic Dyes	Global	This paper highlights the uses of dyes in our day today life.es in dyes	<ul> <li>To know and comprehend the principle and theories of dyes</li> <li>To identify the chromophoric groups and auxochromes</li> </ul>
P4ACC2	Allied Chemistry- II	National	This course gives a detailed study of periodic properties, electrochemistry & photochemistry.	periodic table.
C4CC10	Qualitative Analysis	Global	This paper involves the analysis of inorganic mixtures an acid and	<ul> <li>To identify the group cations</li> <li>To analyse the presence acid and basic radicals in the given</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			basic radicals qualitatively.		mixture of acid
P4ACC3	Allied Practicals	National	This course trains the students to estimate the solutions quantitatively by different techniques.		To select the specific titric method to estimate the amount of analyte present in the given solution.  To apply the expressions and equations to calculate the strength of solutions
C5CC11	Organic Chemistry – III	Regional	This course provides an elaborate study of the preparation, reactions and synthetic application of organic compounds		To analyze the synthetic importance of reactive methylene compounds  To generalize the characteristic features of optical isomers and geometrical isomers
C5ME1	Spectroscopy	Global	This paper will be of much use of the students to take up	•	To identify various functional groups present in organic molecules using IR frequency.



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		MA	higher studies.	•	To predict the number and nature of protons/ carbons in organic molecules in 1H-NMR/ 13C-NMR spectroscopy
C5ME2	Bio Chemistry	Regional	This course gives an overview of classification of enzyme and mechanism of enzyme action		To identify the various metabolic reactions  To understand the importance of nucleic acids
C5SB3	Medicinal Chemistry	Global	This paper highlights the causes of common diseases the role of vitamin for the healthy life and the importance of hormones	•	To study the mechanism of drug action  To determine the designing and binding of drugs with receptors
C5SB4	Nano Chemistry	Global	This paper deals with	•	Learn about the background on



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		TIMA	study of synthesis, properties, structure and applications of nano particles	
C6CC13	Organic Chemistry- IV	Regional	This paper includes the topics, Polynuclear Hydrocarbons, Heterocyclic Compounds, Amino Acids and Proteins, Alkaloids and terpenes.	<ul> <li>To explicate the structures of Citral, Dipentene and Camphor.</li> <li>To distinguish the properties of quinolin and isoquinolin</li> </ul>
C6CC14	Physical Chemistry- IV	Regional	This course gives a detailed study of electrochemistry &photochemistry	<ul> <li>Calculate the cell potential for a nonstandard cell.</li> <li>Know the chemical reactions used in a lead-acid battery</li> </ul>
С6МЕЗ	Advanced	Global	The course is offered to	To sketch Frontier molecular



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Organic		expose the advanced	orbital in photochemistry.
	Chemistry	MA	topics in the field of organic chemistry.	To differentiate the molecular rearrangements and to solve the simple problems
C6ME5	Advanced Physical Chemistry	Global	The course is offered to expose the advanced topics in the field of physical chemistry.	behind the spectral techniques
C6SB5	Computers in Chemistry	Global	This course deals with the use of computers in molecular modeling and drug design and also covers the use of internet and its application in data	<ul> <li>1 To write programs to determine lattice energy, half-life, normality, molarity, molarity, molality</li> <li>To present structure based drug designing in both 2D and 3D</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			search.	
C6SB6	Green Chemistry	Global	This course highlights the need for green chemistry approach which is the need of hour to protect the environment from hazardous chemical	<ul> <li>To differentiate between yield and atom economy</li> <li>To interpret the concept of Stereo selectivity, Chemo selectivity and Regio selectivity</li> </ul>
			p <mark>ollu</mark> tion.	
C6CC15	Inorganic Chemistry Practicals	Global	This paper deals with the preparation of some inorganic complexes and gravimetric estimation of metal ions	<ul> <li>Acquire the knowledge of concept of gravimetric estimations.</li> <li>Recognise the role of reagents in chemistry.</li> </ul>
C6CC16	Organic Chemistry	Global	This paper deals with the preparation of	Recognize the usage of apparatus and laboratory reagents.



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Practicals		some organic	•	Relate the experimental
			Compounds and		observations with theory behind
		AA	analysis of organic		practicals
			compounds.		
C6CC17	Physical	Global	This paper involves the	•	Experience in some scientific
	Chemistry	74/	experimental studies		methods employed in basic and
	Practicals	7	on Rast method,		applied physical chemistry
			determination of	•	Developed skills in procedures
			tr <mark>an</mark> sition temperature,		and instrumental methods
		NEW	phase diagrams, &		applied in analytical and practical
	5		electro chemistry		tasks of physical chemistry
C6CC18	Green Chemistry	Global	This paper includes	•	To understand green synthetic
	Practicals		the greener methods of		methods
		TANDL	preparation of Organic	•	To familiarise the synthesis of
			compounds and nano		silver nanoparticle
		MAT	particles		



**Criterion**: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. CHEMISTRY

**Year** : 2015 - 2020



#### 2017 - 2018

COURSE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	COURSE DESCRIPTION	Course Objectives
C1CC1	Inorganic Chemistry -I	Regional	This course deals with the basics of chemistry required for UG programme	<ul> <li>To comprehend the fundamental properties of atoms, molecules, and the various states of matter</li> <li>To classify the electronic structure of atoms and its influence on chemical properties</li> </ul>
C1CC2	Organic Chemistry -I	Global	This paper deals with electron displacement effects, Fundamentals of reaction mechanism	<ul> <li>Recognize the basic practical skills for synthetic methods of alkenes, and alkyl halide</li> <li>Know the rules for naming</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			,	different organic compound
C1NME1	Profitable Home Industries	Global	This course is designed for the students to become self-employed by training them in the preparation of household articles	<ul> <li>To interpret the hazardous chemicals used in cosmetics.</li> <li>To prepare the various house hold items in laboratory</li> </ul>
Z1ACC1	Allied Chemistry- I	National	This paper deals with the concept of chemical bonding – detailed study of VB Theory & MO Theory and types of Organic Reactions	<ul> <li>To predict the geometry of any molecule with the help of VB and VSEPR theory</li> <li>To construct M.O diagram for homo nuclear diatomic molecule</li> </ul>
N1ACC1	Allied Chemistry-I	National	This paper deals with the concept of chemical bonding –	To predict the geometry of any molecule with the help of VB and VSEPR theory



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		MA	detailed study of VB Theory & MO Theory. Types of Organic Reaction	To construct M.O diagram for homo nuclear diatomic molecule
C2CC3	Inorganic Chemistry -II	Regional	This paper deals with the theories of bonding and the chemistry of III, IV, V & amp; VI group elements.	<ul> <li>To categorize the soft, hard and border line acids</li> <li>To understand the synthetic importance of organometallics</li> </ul>
C2CC4	Organic Chemistry – II	Regional	This course covers the topics alkenes, alkadienes, alkynes and organometallics with special emphasis on their synthetic applications	<ul> <li>Enlighten the relationship         between the structure and acidity         of the compounds</li> <li>Interpret the concept of resonance         and stability of compounds</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C2NME2	Profitable Home Industries	Global	This course is designed for the students to become self-employed by training them in the preparation of household articles	<ul> <li>To interpret the hazardous chemicals used in cosmetics.</li> <li>To prepare the various house hold items in laboratory</li> </ul>
Z2ACC2	Allied Chemistry- II	National	This paper gives a basic understanding of chemistry to other major students as allied paper.	<ul> <li>To illustrate and tabulate the reactions of different functional groups.</li> <li>To understand the kinetics of a chemical reaction and to predict the order of a particular reaction</li> </ul>
N2ACC2	Allied Chemistry- II	National	This paper gives a basic understanding of chemistry to other major students as allied paper.	<ul> <li>To illustrate and tabulate the reactions of different functional groups.</li> <li>To understand the kinetics of a chemical reaction and to predict</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



				the order of a particular reaction
C2CC5  Z2ACC3  & N2ACC3	Volumetric Analysis  Allied Practicals	Global	This course trains the students to prepare the solutions of different concentrations and to estimate quantitatively by different techniques  This course trains the students to estimate the solutions quantitatively by	estimations.  To estimate the amount of calcium using permangano metric method  select the specific titric method to estimate the amount of analyte present in the given solution.  Apply the expressions and equations to calculate the
C3CC6	Organic and Inorganic Chemistry	Regional	different techniques.  This paper deals with the concept of aromaticity and the	<ul> <li>To interpret the concept of aromaticity and the main properties of aromatic</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			inorganic chemistry		compounds.
			part of the paper deals	•	To correlate different bond types
		AA	with the general		of carbon and its hybrid orbitals.
			characteristics of		
			elements		
C3CC7	Physical	Regional	This course provides a	•	Calculate mass defect, packing
	Chemistry-I	9	d <mark>et</mark> ailed study of Gaseou		fraction and binding energy for
	3		st <mark>at</mark> e, Solutions, Theory		any nuclei
			of dilute, solutions and	•	Predict the growing rate,
		155	Radio activity		mechanism and age of plants
					using radioactive elements
C3SB1	Agricultural	Global	The Course gives an	•	To recognise the importance of
	Chemistry		introduction to soil and		soil
		ANDD	fertilizers and also	•	To recall the names of fertilizers
			gives the effect of		
		MAT	pesticides.		
P3ACC1	Allied Chemistry-	National	This paper deals with	•	To comprehend the fundamental



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	I	MA	topics namely bonding and shapes of molecules. Certain physical chemistry portions such as	<ul><li>theories of Valence Bond, types of overlapping and VSEPR.</li><li>To classify the shapes of covalent molecules</li></ul>
			chemical kinetics, thermodynamics are included	
C4CC8	Inorganic Chemistry- III	Global	The Course enables the students to gain knowledge on the chemistry of coordination compounds, carbonyl compounds and "F" block elements.	<ul> <li>Get an overview about the reaction mechanism of metal complexes</li> <li>Know the structure and ending of important coordination compounds</li> </ul>
C4CC9	Physical Chemistry-I	Regional	This course provides an elaborate study of	



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		MA	chemical kinetics, solid state and distribution law.	To distinguish order and molecularity of a chemical reaction
C4SB2	Organic Farming	Global	The paper is to make the students aware of the concepts of organic farming.	<ul> <li>To recall the principles of health-ecology- principle of care.</li> <li>To understand the concepts of organic farming- world of organic agriculture.</li> </ul>
P4ACC2	Allied Chemistry-	National	This course gives a detailed study of periodic properties, electrochemistry & photochemistry.	<ul> <li>To predict the periodicity in the periodic table.</li> <li>To construct an electrochemical cell diagram and identifying the anode, cathode.</li> </ul>
C4CC10	Qualitative Analysis	Global	This paper involves the analysis of inorganic mixtures an acid and	<ul> <li>To identify the group cautions</li> <li>To analyse the presence acid and basic radicals in the given</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			basic radicals qualitatively.	mixture of acid
P4ACC3	Allied Practicals	National	This course trains the students to estimate the solutions quantitatively by different techniques.	<ul> <li>To select the specific titric method to estimate the amount of analyte present in the given solution.</li> <li>To apply the expressions and equations to calculate the strength of solutions</li> </ul>
C5CC11	Organic Chemistry – III	Regional	This course provides an elaborate study of the preparation, reactions and synthetic application of organic compounds	<ul> <li>To analyze the synthetic importance of reactive methylene compounds</li> <li>To generalize the characteristic features of optical isomers and geometrical isomers</li> </ul>
C5ME1	Spectroscopy	Global	This paper will be of much use of the	To identify various functional groups present in organic



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			students to take up		molecules using IR frequency.
			higher studies.		To predict the number and nature
			ingrier stadies.		of protons/ carbons in organic
					molecules in 1H-NMR/ 13C-NMR
		133/1	EAD		·
					spectroscopy
C5ME2	Bio Chemistry	Regional	This course gives an		To identify the various metabolic
		7	overview of		reactions
			cl <mark>as</mark> sification of	•	To understand the importance of
	7		e <mark>nzy</mark> me and		nucleic acids
		157	mechanism of enzyme		
			action		
				H	<u>/85</u>
C5SB3	Medicinal	Global	This paper highlights	•	To study the mechanism of drug
	Chemistry		the causes of common	1	action
		TAINDL	diseases the role of	•	To determine the designing and
			vitamin for the healthy		binding of drugs with receptors
		1/1 A	life and the importance		
			of hormones		



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C5SB4	Natural and Synthetic Dyes	Global	This paper highlights the uses of dyes in our day today life.	<ul> <li>To know and comprehend the principle and theories of dyes</li> <li>To identify the chromophoric groups and auxochromes in dyes</li> </ul>
C6CC13	Organic Chemistry- IV	Regional	This paper includes the topics, Polynuclear Hydrocarbons, Heterocyclic Compounds, Amino Acids and Proteins, Alkaloids and terpenes.	<ul> <li>To explicate the structures of Citral, Dipentene and Camphor.</li> <li>To distinguish the properties of quinolin and isoquinolin</li> </ul>
C6CC14	Physical Chemistry- IV	Regional	This course gives a detailed study of electrochemistry & photochemistry	<ul> <li>Calculate the cell potential for a nonstandard cell.</li> <li>Know the chemical reactions used in a lead-acid battery</li> </ul>
C6ME3	Advanced Organic	Global	The course is offered to expose the	To sketch Frontier molecular orbitals in photochemistry.



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Chemistry	MA	advanced topics in the field of organic chemistry.	To differentiate the molecular rearrangements and to solve the simple problems
6ME5	Advanced Physical Chemistry	Global	The course is offered to expose the advanced topics in the field of physical chemistry.	<ul> <li>To understand the theories behind the spectral techniques like MW.IR,NMR and ESR</li> <li>To study the applications of the above techniques to elucidate the structures of molecules</li> </ul>
C6SB5	Computers In Chemistry	Global	This course deals with the use of computers in molecular modelling and drug design and also covers the use of internet and its application in data search.	<ul> <li>To write programs to determine lattice energy, half-life, normality, molarity, molality</li> <li>To present structure based drug designing in both 2D and 3D</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C6SB6	Green Chemistry	Global	This course highlights the need for green chemistry approach which is the need of hour to protect the environment from hazardous chemical pollution.	<ul> <li>To differentiate between yield and atom economy</li> <li>To interpret the concept of Stereo selectivity, Chemo selectivity and Regio selectivity</li> </ul>
C6CC15	Inorganic Chemistry Practicals	Global	This paper deals with the preparation of some inorganic complexes and gravimetric estimation of metal ions	<ul> <li>Acquire the knowledge of concept of gravimetric estimations.</li> <li>Recognise the role of reagents in chemistry.</li> </ul>
C6CC16	Organic Chemistry Practicals	Global	This paper deals with the preparation of some organic Compounds and	<ul> <li>Recognize the usage of apparatus and laboratory reagents.</li> <li>Relate the experimental observations with theory behind</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 

**Year** : 2015 - 2020



			analysis of organic	practical's.asis
			compounds	
C6CC17	Physical	Global	This paper involves the	Experience in some scientific
	Chemistry	A	experimental studies	methods employed in basic and
	Practicals		on Rast method,	applied physical chemistry
	A	79/	determination of	Developed skills in procedures
		7	transition temperature,	and instrumental methods
		1	phase diagrams, &	applied in analytical and practical
			electro chemistry	tasks of physical chemistry

#### 2016 - 2017

COURSE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	COURSE DESCRIPTION	Course Objectives
C1CC1	Inorganic Chemistry - I	Regional	This course deals with the basics of chemistry	To comprehend the fundamental properties of atoms, molecules,



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			required for UG	and the various states of matter
			programme	To classify the electronic
		AA		structure of atoms and its
			EAD	influence on chemical properties
C1CC2	Organic	Global	This paper deals with	Recognize the basic practical
	Chemistry - I		electron displacement	skills for synthetic methods of
		7	ef <mark>fe</mark> cts, Fundamentals	alkenes, and alkyl halide
		1	of reaction mechanism	Know the rules for naming
				different organic compounds
C1NME1	Profitable Home	Global	This course is designed	To interpret the hazardous
	Industries		for the students to	chemicals used in cosmetics.
	4		become self-employed	To prepare the various house hold
	9		by training them in the	items in laboratory
		TANDL	preparation of	•
			household articles	
Z1ACC1	Allied	National	This paper deals with	To predict the geometry of any
	Chemistry - I		the concept of	molecule with the help of VB and



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			chemical bonding –	VSEPR theory
			detailed study of VB	To construct M.O diagram for
		ANA	Theory & MO Theory	homo nuclear diatomic molecule
			and types of Organic	
			Reactions	
N1ACC1	Allied	National	This paper deals with	To predict the geometry of any
	Chemistry - I	9 ( )	the concept of	molecule with the help of VB and
	J		chemical bonding –	VSEPR theory
			d <mark>etai</mark> led study of VB	To construct M.O diagram for
		757	Theory & MO Theory.	homo nuclear diatomic molecule
	(2)	THE WAY	Types of Organic	163
			Reactions	
C2CC3	Inorganic	Regional	This paper deals with	To categorize the soft, hard and
	Chemistry - II	TAINDL	the theories of bonding	border line acids
			and	To understand the synthetic
		11/1	the chemistry of III, IV,	importance of rgano metallics
		To be a second	V & amp; VI group	



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			elements.	
C2CC4	Inorganic Chemistry - II	Regional	This course covers the topics alkenes, alkadienes, alkynes and organo metallics with special emphasis on their synthetic applications	<ul> <li>Enlighten the relationship         between the structure and acidity         of the compounds</li> <li>Interpret the concept of         resonance and stability of         compounds</li> </ul>
C2NME2	Profitable Home Industries	Global	This course is designed for the students to become self-employed by training them in the preparation of household articles	<ul> <li>To interpret the hazardous chemicals used in cosmetics.</li> <li>To prepare the various house hold items in laboratory</li> </ul>
Z2ACC2	Allied Chemistry-	National	This paper gives a basic understanding of chemistry to other	To illustrate and tabulate the reactions of different functional groups.



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		MA	major students as allied paper.	•	To understand the kinetics of a chemical reaction and to predict the order of a particular reaction
N2ACC2	Allied Chemistry- II	National	This paper gives a basic understanding of chemistry to other major students as allied paper.		To illustrate and tabulate the reactions of different functional groups.  To understand the kinetics of a chemical reaction and to predict the order of a particular reaction
C2CC5	Volumetric Analysis	Global	This course trains the students to prepare the solutions of different concentrations and to estimate quantitatively by different techniques	•	To apply the principles of volumetric analysis in various estimations.  To estimate the amount of calcium using permangano metric method
Z2ACC3 &	Allied Practicals	National	This course trains the students to estimate	•	select the specific titric method to estimate the amount of analyte



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



N2ACC3			the solutions		present in the given solution.
			quantitatively by	•	Apply the expressions and
		AA	different techniques.		equations to calculate the
			EAD		strength of solutions
C3CC6	Organic	Regional	This paper deals with	•	To interpret the concept of
	And Inorganic	<b>73/</b>	the concept of		aromaticity and the main
	Chemistry	9 ( )	aromaticity and the		properties of aromatic
			in <mark>or</mark> ganic chemistry		compounds.
			p <mark>art</mark> of the paper deals	•	To correlate different bond types
		155	with the general		of carbon and its hybrid orbitals.
	2	all	characteristics of		3
			elements	И	
C3CC7	Physical	Regional	This course provides a	•1	Calculate mass defect, packing
	Chemistry-I	AWDI	detailed study of	1	fraction and binding energy for
			Gaseous state,		any nuclei
		W A	Solutions, Theory	•	Predict the growing rate,
		36	of dilute, solutions		mechanism and age of plants
					using radioactive elements
L			58		



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			and	
		CA	Radio activity	
C3SB1	Pollution	Global	This paper deals with	To recognise the importance of
	And Its		different types of	clean environment
	Control Measure		pollutions in environment	To recall the names of pollutants
P3ACC1	Allied Chemistry-	National	T <mark>his</mark> paper deals with	To comprehend the fundamental
	I	RECT	topics namely bonding	theories of Valence Bond, types of
	(2)	THE STATE OF THE S	and shapes of	overlapping and VSEPR.
	(8)		molecules. Certain	To classify the shapes of covalent
	Y		physical chemistry	molecules
	18	Ann	portions such as	
		MANDE	chemical kinetics,	
			thermodynamics are	
		VAI	included	
C4CC8	Inorganic	Global	The Course enables the	Get an overview about the



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Chemistry-III		students to gain		reaction mechanism of metal
			knowledge on the		complexes
		AA	chemistry of	•	Know the structure and bonding
			coordination		of important coordination
			compounds, carbonyl		compounds
		53/ / /	compounds and "F'	5	
	B	7	block elements.	V	
C4CC9	Physical	Regional	This course provides	•	To calculate lattice energy of
	Chemistry-I		an elaborate study of		crystalline solids
		1257	chemical inetics, solid	•	To distinguish order and
	2	all	state and distribution		molecularity of a chemical
			law.		reaction
C4SB2	Organic Farming	Global	The paper is to make	•	To recall the principles of health-
		AWDD	the students aware of		ecology- principle of care.
			the concepts of organic	•	To understand the concepts of
		IVI A-	farming.		organic farming- world of organic
		461			agriculture.



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



P4ACC2	Allied Chemistry-	National	This course gives a detailed study of periodic properties, electrochemistry & photochemistry.	<ul> <li>To predict the periodicity in the periodic table.</li> <li>To construct an electrochemical cell diagram and identifying the anode, cathode.</li> </ul>
C4CC10	Qualitative Analysis	Global	This paper involves the analysis of inorganic mixtures an acid and basic radicals qualitatively.	<ul> <li>To identify the group cautions</li> <li>To analyse the presence acid and basic radicals in the given mixture of acid</li> </ul>
P4ACC3	Allied Practicals	National	This course trains the students to estimate the solutions quantitatively by different techniques.	<ul> <li>To select the specific titric method to estimate the amount of analyte present in the given solution.</li> <li>To apply the expressions and equations to calculate the strength of solutions</li> </ul>
C5CC11	Organic	Regional	This course provides	To analyze the synthetic



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Chemistry – III	NA	an elaborate study of the preparation, reactions and synthetic application of organic compounds	•	importance of reactive methylene compounds  To generalize the characteristic features of optical isomers and geometrical isomers
C5ME1	Spectroscopy	Global	This paper will be of much use of the students to take up higher studies.		To identify various functional groups present in organic molecules using IR frequency.  To predict the number and nature of protons/ carbons in organic molecules in 1H-NMR/ 13C-NMR spectroscopy
C5ME2	Bio Chemistry	Regional	This course gives an overview of classification of enzyme and mechanism of enzyme action	•	To identify the various metabolic reactions  To understand the importance of nucleic acids



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C5SB3	Medicinal Chemistry	Global	This paper highlights the causes of common diseases the role of vitamin for the healthy life and the importance of hormones	<ul> <li>To study the mechanism of drug action</li> <li>To determine the designing and binding of drugs with receptors</li> </ul>
C5SB4	Natural And Synthetic Dyes	Global	This paper highlights the uses of dyes in our day today life.	<ul> <li>To know and comprehend the principle and theories of dyes</li> <li>To identify the chromophoric groups and auxochromes in dyes</li> </ul>
C6CC13	Organic Chemistry-IV	Regional	This paper includes the topics, Polynuclear Hydrocarbons, Heterocyclic Compounds, Amino Acids and Proteins, Alkaloids and terpenes.	<ul> <li>To explicate the structures of Citral, Dipentene and Camphor.</li> <li>To distinguish the properties of quinolin and isoquinolin</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C6CC14	Physical Chemistry-IV	Regional	This course gives a detailed study of electrochemistry & photochemistry	<ul> <li>Calculate the cell potential for a nonstandard cell.</li> <li>Know the chemical reactions used in a lead-acid battery</li> </ul>
C6ME3	Advanced Organic Chemistry	Global	The course is offered to expose the advanced topics in the field of organic chemistry.	<ul> <li>To sketch Frontier molecular orbitals in photochemistry.</li> <li>To differentiate the molecular rearrangements and to solve the simple problems</li> </ul>
C6ME5	Advanced Physical Chemistry	Global	The course is offered to expose the advanced topics in the field of physical chemistry.	behind the spectral techniques
C6SB5	Computers in Chemistry	Global	This course deals with the use of computers	To write programs to determine lattice energy, half-life, normality,



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

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		SIMA	in molecular modelling and drug design and also covers the use of internet and its application in data search.	<ul> <li>molarity, molality</li> <li>To present structure based drug designing in both 2D and 3D</li> </ul>
C6SB6	Green Chemistry	Global	This course highlights the need for green chemistry approach which is the need of hour to protect the environment from hazardous chemical pollution.	<ul> <li>To differentiate between yield and atom economy</li> <li>To interpret the concept of Stereo selectivity, Chemo selectivity and Regio selectivity</li> </ul>
C6CC15	Inorganic Chemistry Practicals	Global	This paper deals with the preparation of some inorganic complexes and	<ul> <li>Acquire the knowledge of concept of gravimetric estimations.</li> <li>Recognise the role of reagents in chemistry</li> </ul>



**Criterion**: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C6CC16	Organic					
	Chemistry Practicals		Global	This paper deals with the preparation of some organic Compounds and analysis of organic compounds.	• 60	Recognize the usage of apparatus and laboratory reagents. Relate the experimental observations with theory behind practical's asis
C6CC17	Physical Chemistry Practicals	-C)@150	Global	This paper involves the experimental studies on Rast method, determination of transition temperature, phase diagrams, & electro chemistry		Experience in some scientific methods employed in basic and applied physical chemistry Developed skills in procedures and instrumental methods applied in analytical and practical tasks of physical chemistry



Criterion : I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 

: 2015 - 2020 Year



#### 2015 - 2016

2015 - 2016		A A		
COURSE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	COURSE DESCRIPTION	Course Objectives
C1CC1	Inorganic Chemistry -I	Regional	This course deals with the basics of chemistry required for UG programme	<ul> <li>To comprehend the fundamental properties of atoms, molecules, and the various states of matter</li> <li>To classify the electronic structure of atoms and its influence on chemical properties</li> </ul>
C1CC2	Organic Chemistry - I	Global	This paper deals with electron displacement effects, Fundamentals of	<ul> <li>Recognize the basic practical skills for synthetic methods of alkenes, and alkyl halide</li> <li>Know the rules for naming different organic compounds</li> </ul>



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			reaction	
			mechanism	
C1NME1	Profitable	Global	This course is	To interpret the hazardous chemicals
	Home	1337	designed for the	used in cosmetics.
	Industries		students to	To prepare the various house hold items
	mustrics		become self-	in laboratory
		9/	employed by	
			traini <mark>n</mark> g them in	
			the p <mark>rep</mark> aration of	
	5	1 1 15	household articles	7
Z1ACC1	Allied	National	This paper deals	To predict the geometry of any molecule
	Chemistry- I		with the concept	with the help of VB and VSEPR theory
		<b>3)</b> ( )	of chemical	To construct M.O diagram for homo
		MINI	bonding - detailed	nuclear diatomic molecule
			study of VB	
		11/1	Theory & MO	
			Theory and types	
			of Organic	



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			Reactions	
N1ACC1	Allied Chemistry- I	National	This paper deals with the concept of chemical bonding detailed study of VB Theory & MO Theory. Types of Organic Reactions	<ul> <li>To predict the geometry of any molecule with the help of VB and VSEPRB theory</li> <li>To construct M.O diagram for homo nuclear diatomic molecule</li> </ul>
C2CC3	Inorganic Chemistry - II	Regional	This paper deals with the theories of bonding and the chemistry of III, IV, V & Dry VI group elements.	<ul> <li>To categorize the soft, hard and border line acids</li> <li>To understand the synthetic importance of organometallics</li> </ul>
C2CC4	Organic Chemistry – II	Regional	This course covers the topics	Enlighten the relationship between the structure and acidity of the compounds



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			alkenes,	Interpret the concept of resonance and
			alkadienes,	stability of compounds
			alkynes and	
			organometallics	
			with special	
			emphasis on their	Yal
		737	synthetic	
			applications	
COMMEO	D C4 - 1-1-	01.1.1	TN.:	
C2NME2	Profitable	Global	This course is	To interpret the hazardous chemicals
	Home	4	designed for the	used in cosmetics.
	Industries	321	students to	To prepare the various house hold items
			become self-	in laboratory
			employed by	7 // 8
		KINT	training them in	
		1	the preparation of	
		100	household articles	
Z2ACC2	Allied	National	This paper gives a	To illustrate and tabulate the reactions
			basic	of different functional groups.



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Chemistry- II		understanding of	To understand the kinetics of a chemical
			chemistry to other	reaction and to predict the order of a
		A A	major students as	particular reaction
			allied paper.	
			LEAD	
N2ACC2	Allied	National	This paper gives a	To illustrate and tabulate the reactions
	Chemistry- II	3/	basic	of different functional groups.
			unde <mark>rs</mark> tanding of	To understand the kinetics of a chemical
			chemistry to other	reaction and to predict the order of a
			majo <mark>r s</mark> tudents as	particular reaction
	(2)		allied paper.	3
C2CC5	Volumetric	Global	This course trains	To apply the principles of volumetric
	Analysis	3	the students to	analysis in various estimations.
		TINI	prepare the IGH	To estimate the amount of calcium using
			solutions of	permangano metric method
		1/1	different	
			concentrations	
			and to estimate	



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



		TA P	quantitatively by different techniques	
Z2ACC3	Allied	National	This course trains	select the specific titric method to
&	Practicals		the students to	estimate the amount of analyte present
			estimate the	in the given solution.
N2ACC3		57	solutions	<ul> <li>Apply the expressions and equations to</li> </ul>
			quantitatively by	calculate the strength of solutions
			differ <mark>en</mark> t	
	4	1	techniques.	7
C3CC6	Organic	Regional	This paper deals	To interpret the concept of aromaticity
	And Inorganic		with the concept	and the main properties of aromatic
	Chemistry	3) ( )	of aromaticity and	compounds.
		AVND	the inorganic	To correlate different bond types of
			chemistry part of	carbon and its hybrid orbitals.
		IVI A	the paper deals	
		36	with the general	
			characteristics of	



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			elements	
C3CC7	Physical Chemistry- I	Regional	This course provides a detailed study of Gaseous state, Solutions, Theory of dilute, solutions and Radio activity	<ul> <li>Calculate mass defect, packing fraction and binding energy for any nuclei</li> <li>Predict the growing rate, mechanism and age of plants using radioactive elements</li> </ul>
C3SB1	Pollution And Its Control Measure	Global	This paper deals with different types of pollutions in environment	<ul> <li>To recognise the importance of clean environment</li> <li>To recall the names of pollutants</li> </ul>
P3ACC1	Allied Chemistry- I	National	This paper deals with topics namely bonding and shapes of	<ul> <li>To comprehend the fundamental theories of Valence Bond, types of overlapping and VSEPR.</li> <li>To classify the shapes of covalent</li> </ul>



**Criterion** : I – Curricular Aspects

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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			molecules. Certain physical	molecules
			chemistry portions such as chemical kinetics, thermodynamics are included	
C4CC8	Inorganic Chemistry- III	Global	The Course enables the students to gain knowledge on the chemistry of coordination compounds, carbonyl compounds and "F' block elements.	<ul> <li>Get an overview about the reaction mechanism of metal complexes</li> <li>Know the structure and bonding of important coordination compounds</li> </ul>



**Criterion** : I – Curricular Aspects

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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



C4CC9	Physical Chemistry- I	Regional	This course provides an elaborate study of chemical kinetics, solid state and distribution law.	<ul> <li>To calculate lattice energy of crystalline solids</li> <li>To distinguish order and molecularity of a chemical reaction</li> </ul>
C4SB2	Forensic Science	Global	This paper deals with principles and procedures of crime investigations	<ul> <li>To classify blood grouping in human body</li> <li>To identify the type of poison</li> </ul>
P4ACC2	Allied Chemistry- II	National 1	This course gives a detailed study of periodic properties, electrochemistry	<ul> <li>To predict the periodicity in the periodic table.</li> <li>To construct an electrochemical cell diagram and identifying the anode, cathode.</li> </ul>



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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			& photochemistry.	
C4CC10	Qualitative Analysis	Global	This paper involves the analysis of inorganic mixtures an acid and basic radicals qualitatively.	<ul> <li>To identify the group cations</li> <li>To analyse the presence acid and basic radicals in the given mixture of acid</li> </ul>
P4ACC3	Allied Practicals	National	This course trains the students to estimate the solutions quantitatively by different techniques.	<ul> <li>To select the specific titric method to estimate the amount of analyte present in the given solution.</li> <li>To apply the expressions and equations to calculate the strength of solutions</li> </ul>
C5CC11	Organic	Regional	This course	To analyze the synthetic importance of



Criterion : I - Curricular Aspects

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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 

: 2015 - 2020 Year



		1		
	Chemistry – III		provides an	reactive methylene compounds
			elaborate study of	To generalize the characteristic features
			the preparation,	of optical isomers and geometrical
			reactions and	isomers
			synthetic	Y GA
			application of	
		37	organic	
		7	compounds	
C5ME1	Spectroscopy	Global	This paper will be	To identify various functional groups
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	of much use of the	present in organic molecules using IR
	(2)		students to take	frequency.
	C		up higher studies.	To predict the number and nature of
			<b>Y</b> / <b>Y</b>	protons/ carbons in organic molecules in
		MIND	LY LIGHT	1H-NMR/13C-NMR spectroscopy
C5ME2	Bio Chemistry	Regional	This course gives	To identify the various metabolic
		A A	an overview of	reactions
		36	classification of	To understand the importance of nucleic
			enzyme and	acids
		1	77	



**Criterion** : I – Curricular Aspects

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**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



			mechanism of enzyme action	
			chzyme action	
C5SB3	Medicinal	Global	This paper	To study the mechanism of drug action
	Chemistry	33	highlights the	To determine the designing and binding
			causes of common	of drugs with receptors
		X /	diseases the role	
		57	of vitamin for the	
			healt <mark>hy</mark> life and	
			the importance of	
	۲۸ ما	The state of the s	hormones	
C5SB4	Natural And	Global	This paper	To know and comprehend the principle
	Synthetic Dyes		highlights the	and theories of dyes
			uses of dyes in	To identify the chromophoric groups and
		TIM	our day today life.	auxochromes in dyes
C6CC13	Organic	Regional	This paper	To explicate the structures of Citral,
	Chemistry- IV		includes the	Dependence and Camphor.
			topics,	To distinguish the properties of quinolin
			Polynuclear	and isoquinolin



**Criterion** : I – Curricular Aspects

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			Hydrocarbons, Heterocyclic Compounds, Amino Acids and Proteins, Alkaloids and terpenes.	
C6CC14	Physical Chemistry- IV	Regional	This course gives a detailed study of electrochemistry & photochemistry	<ul> <li>Calculate the cell potential for a nonstandard cell.</li> <li>Know the chemical reactions used in a lead-acid battery</li> </ul>
C6ME3	Advanced Organic Chemistry	Global	The course is offered to expose the advanced topics in the field of organic chemistry.	<ul> <li>To sketch Frontier molecular orbitals in photochemistry.</li> <li>To differentiate the molecular rearrangements and to solve the simple problems</li> </ul>



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C6ME5	Advanced Physical Chemistry	Global	The course is offered to expose the advanced topics in the field	<ul> <li>To understand the theories behind the spectral techniques like MW.IR,NMR and ESR</li> <li>To study the applications of the above</li> </ul>
			of physical chemistry.	techniques to elucidate the structures of molecules
C6SB5	Computers in Chemistry	Global	This course deals with the use of computers in molecular modeling and drug design and also covers the use of internet and its application in data search.	<ul> <li>To write programs to determine lattice energy, half-life, normality, molarity, molality</li> <li>To present structure based drug designing in both 2D and 3D</li> </ul>
C6SB6	Green	Global	This course highlights the	To differentiate between yield and atom economy



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

**Course Outcomes (COs) – B.Sc. CHEMISTRY** 



	Chemistry		need for green	To interpret the concept of Stereo
			chemistry	selectivity, Chemo selectivity and Regio
			approach which is	selectivity
			the need of hour	
			to protect the	KOA .
			environment from	YOU
		37	hazardous	
		7	chem <mark>ic</mark> al	
			pollut <mark>io</mark> n.	
0.0015			mil 1	
C6CC15	Inorganic	Global	This <mark>pa</mark> per deals with the	Acquire the knowledge of concept of
	Chemistry	7	preparation of	gravimetric estimations.
	Practicals		some inorganic	Recognise the role of reagents in
			complexes and	chemistry.
		UND	gravimetric estimation of	
	,		metal ions	
C6CC16	Organic	Global	This paper deals	Recognize the usage of apparatus and
200010	Chemistry	Global	with the	laboratory reagents.
	Practicals		preparation of	
	Fracticals		some organic	Relate the experimental observations



**Criterion** : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

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		40	Compounds and analysis of organic compounds.	with theory behind practical's asis
C6CC17	Physical Chemistry Practicals	Global	This paper involves the experimental studies on Rast method, determination of transition temperature, phase diagrams, & electro chemistry	<ul> <li>Experience in some scientific methods employed in basic and applied physical chemistry</li> <li>Developed skills in procedures and instrumental methods applied in analytical and practical tasks of physical chemistry</li> </ul>